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Residential Paper Recovery A Municipal Implementation Guide

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Residential Paper Recovery

A Municipal Implementation Guide

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16. Abstracts
The report deals with the recovery of waste paper from homes, principally in the form of newspapers. Collecting methods, separating requirements, and cost factors are discussed, along with equipment such as trucks, racks, and associated elements.

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RESIDENTIAL PAPER RECOVERY
A Municipal Implementation Guide

This publication (SW-155) was written
by PENELOPE HANSEN

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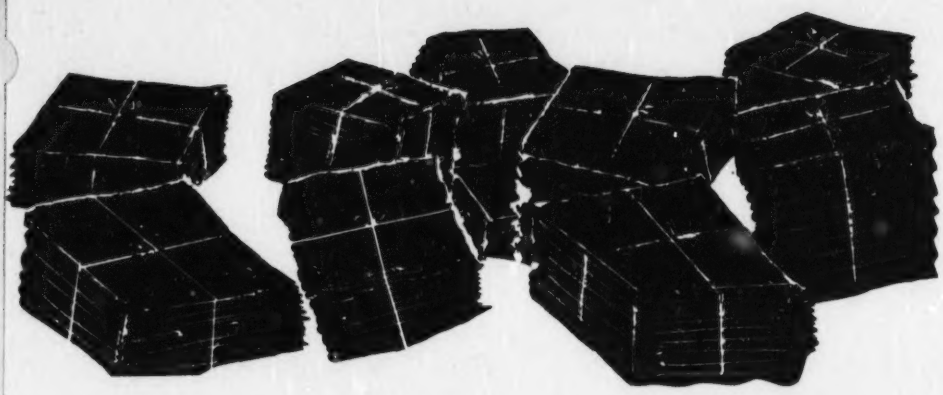

A Municipal Implementation Guide

Paper recovery from the home through source separation enables this material to be reintroduced into the manufacturing process. Source separation is defined as the setting aside of recyclable waste materials (such as paper, glass, and metal containers) at their point of generation (the home, office, or other place of business) by the generator. This separation is followed by transportation of the recyclable materials from their point of generation to a secondary materials dealer or directly to a manufacturer. Transportation may be provided by the generator, city collection vehicles, private haulers, scrap dealers, or by voluntary recycling organizations.

The source separation technique of most interest to municipal government decision-makers is separation by the generator followed by regular municipal or private collection. This technique is the one used most widely for paper collection. Glass and can separation has been tried in only a few communities on a monthly basis. The economic balance of these systems has been poor to date. The U.S. Environmental Protection Agency (EPA) is currently in the process of demonstrating a weekly collection system in which all recyclable elements of household waste will be simultaneously collected. The projected economics of this system appear to be excellent, and it will be demonstrated and evaluated in 1976. As most of the demonstrated separate collection data relates to paper at this time, only the methods of separately collecting paper are discussed here.

Source separation of paper is feasible primarily for newspapers from homes, corrugated containers from commercial and industrial establishments, and printing and writing papers from offices. It is at these points that recyclable grades are generated in a relatively homogeneous and concentrated form. Since the latter two situations are typically handled by private haulers who collect commercial and industrial wastes, a municipality is mainly concerned with newspaper source separation by residents. In cases where an appropriate market exists, mixed paper from residences can be separated and collected with the newspaper.

More than 120 cities in the United States are now conducting separate paper collection programs *(Table 1)*, while only two such programs existed in 1970. This significant increase is due to the: (1) increase in disposal costs; (2) increase in environmental awareness and concern; (3) realization that separate collections are more effective in removing materials from the waste stream and far less costly than recycling centers operated by municipal employees.

TABLE 1

LISTING OF KNOWN COMMUNITIES WITH NEWSPAPER RECOVERY COLLECTION PROGRAMS AND COMMUNITIES PLANNING FOR A COLLECTION PROGRAM AUGUST 1974*

Separate Collections

Abington, Pa.
Albany, N. Y.
Alexandria, Va.
Allentown, Pa.
Ann Arbor, Mich.
Arlington, Texas
Arlington, Va.
Atherton, Calif.
Aurora, Ill.
Austin, Minn.
Avon-by-the-Sea, N. J.
Baldwin, N. Y.
Bedford, Mass.
Belmont, Calif.
Benton County, Tenn.
Berkeley, Calif.
Beverly, Mass.
Bowie, Md.
Briarcliff Manor, N. Y.
Brookhaven, N. Y.
Burlingame, Calif.
Cambridge, Mass.
Cincinnati, Ohio
Clifton, N. J.
Columbus, Ohio
Dallas, Texas
Dayton, Ohio
Dobbs Ferry, N. Y.
East Palo Alto, Calif.
Elizabeth, N. J.
Freeport, N. Y.
Floral Park, N. Y.
Fort Lee, N. J.
Fort Worth, Texas
Foster City, Calif.
Fullerton, Calif.
Garden City, N. Y.
Great Neck, N. Y.
Green Bay, Wis.
Greenbelt, Md.
Greenburgh, N. Y.
Greenville, S. C.
Half Moon Bay, Calif.
Harrison, N. Y.
Haverhill, Mass.
Hempstead, N. Y.
Hillsborough, Calif.
Huntington Woods, Mich.
Irvington, N. J.
Irvington, N. Y.
Joliet, Ill.
Larchmont, N. Y.
Lawrence, N. J.
Lawton, Okla.
Long Beach, N. J.
Louisville, Ky.
Lynchburg, Va.
Lynn, Mass.
Lynnbrook, N. Y.
Mamaroneck, N. Y.
Manchester, Conn.
Manhasset, N. Y.
Marblehead, Mass.
Millburn, N. J.
Menlo Park, Calif.
Modesto, Calif.
Mount Kisco, N. Y.
Neenah, Wis.
New Castle, N. Y.
Newport Beach, Calif.
New Rochelle, N. Y.
Newton, Mass.
New York, N. Y.
North Bergen, N. J.
North Hempstead, N. Y.
North Salem, N. Y.
North Tarrytown, N. Y.
Norwalk, Conn.
Oceanside, Calif.
Oceanside, N. Y.
Ossining, N. Y.
Oyster Bay, N. Y.
Pacifica, Calif.
Peekskill, N. Y.
Pelham, N. Y.
Pelham Manor, N. Y.
Phoenix, Ariz.
Pleasantville Village, N. Y.
Portola Valley, Calif.
Princeton, N. J.
Redondo Beach, Calif.
Redwood City, Calif.
Ridgewood, N. J.
Rochester, Minn.
Rochester, N. Y.
Rockville, Md.
Rolling Meadows, Ill.
Salem, Va.
Salt Lake City, Utah
St. Matthews, Ky.
San Bernardino, Calif.
San Carlos, Calif.
San Diego, Calif.
San Mateo, Calif.
Santa Maria, Calif.
Santa Rosa, Calif.
Shorewood, Wis.
Summit, N. Y.
Tarrytown, N. Y.
Tustin, Calif.
Union City, N. J.
University City, Mo.
University Park, Texas
Villa Park, Ill.
Washington, D. C.
West Hartford, Conn.
Wethersfield, Conn.
Wyoming, Ohio

**U.S. Environmental Protection Agency. Unpublished data.*

Rack Collections

Madison, Wis.	San Francisco, Calif.
Rockford, Ill.	Sheboygan, Wis.
	New York, N.Y.

Planning Programs

Casa Grande, Ariz.	Norman, Okla.
Covina, Calif.	Ontario, Calif.
DeKalb County, Ga.	Ocean Township, N. J.
Denver, Colo.	Paterson, N. J.
Durham, N. C.	Rutherford, N. J.
Fenwick, N. J.	Pasadena, Texas
Glen Rock, N. J.	Tenafly, N. J.
Inglewood, N. J.	Toledo, Ohio
Lexington, Mass.	Tucson, Ariz.
Lyndhurst, N. J.	Wayne, N. J.
Miramar, Fla.	Whittier, Calif.

TABLE 2

MUNICIPAL WASTE GENERATION AND COMPOSITION IN THE U. S., 1973*†

Component	Total Tons in the Waste Stream in Millions of Tons (as discarded)		Percentage Composition (as discarded)	
Paper		44.2		33.0
News	8.0		6.0	
Corrugated	11.8		9.0	
Office Paper	5.4		4.0	
Other	19.0		14.0	
Glass		13.2		9.9
Ferrous Metals		11.0		8.2
Nonferrous Metals		1.4		1.0
Food Waste		22.4		16.6
Yard Waste		25.0		18.5
Other		17.2		12.8
	TOTAL	134.4		100.0

**Smith, F. A., Environmental Protection Agency. Unpublished data.*
† Average per capita generation = 134.8 million tons ÷ (210,000,000 people x 365 days) = 3.52 lbs per person per day.

Quantity of Materials Obtainable Through Source Separation

The average national municipal solid waste stream is composed primarily of paper (about a third by weight) together with food, yard wastes, glass, and metal wastes *(Table 2)*. The average per capita waste generated is 3.52 lbs. per person per day. These waste generation data include wastes generated in households, commercial and business establishments, and institutions (schools, hospitals, etc.); excluded are industrial process wastes, agricultural and animal wastes, construction and demolition wastes, mining wastes, abandoned automobiles, ashes, street sweepings, and sewage sludge. Wastes now being recycled are also excluded.

By using the national average for waste composition, a city can roughly estimate the quantity of materials which might be recovered through a source separation program. Specific generation and composition data for a given city would permit a more accurate prediction.

The amount of discarded newspaper varies from house to house, neighborhood to neighborhood, and city to city. This variation is related to such factors as individual household purchasing habits, size and number of newspapers published in a particular area, and the socioeconomic level of the residents. The waste newspaper generation rate in a high-income neighborhood may be two or three times that of medium-to-low income neighborhoods in the same area.

On a national average, newspapers comprise about 19 percent of discarded paper and about 6 percent of total municipal solid wastes. For a city of 100,000 population with a 50 percent par-

ticipation rate, the approximate quantity of recoverable newspapers can be determined as follows: 100,000 persons x 3.52 lbs. per person per day x 0.19 x 0.31 x 0.5 = 10,366 lbs. per day or about 5 tons per day. At a price of $15 per ton, the weekly revenue would be $525.

Alternate Methods of Separate Paper Collection

There are two basic methods for separate paper collection presently in use. The most common system utilizes *separate vehicles* to collect the paper, while the other method uses a rack attached to the regular refuse collection vehicle.

SEPARATE TRUCK

System Description

Trucks. Standard packers, usually taken from the standby fleet, are the most common vehicle for separate collection *(Figure 1)*. Van and open-bodied trucks may also be used *(Figure 2)*, although they are more expensive to operate than a standard packer because they require an extra crew member to stack the paper inside the truck.

Crew Size. One man for a side-loading packer and two for a rear loader are sufficient to collect paper. As mentioned above, a third worker is needed if trucks other than packers are used. Because of the higher cost of backyard collection, curbside or alley collection service are generally employed.

Routing. The paper collection vehicle can cover three to five normal collection routes each day. This is due to such factors as: (1) having fewer items to handle per stop; (2) no requirement to return containers to the curb; (3) usually less than

Figure 1. These bundles of wastepaper are being loaded into a separate collection packer truck in the town of Hempstead, N.Y.

Figure 2. Van and open, stake-type trucks are also used for collecting source-separated newspaper.

Figure 3. Separately collected newspapers from the town of Hempstead, N.Y., are being unloaded at a local wastepaper dealer.

100 percent participation; (4) the fact that participating households may not place the paper at the curb every collection day.

Unloading Point. If the paperstock dealer is within a reasonable distance, the truck can unload directly at his facility *(Figure 3)*. Paper dealers in distant locations usually place a large van at the transfer station or disposal site into which the paper is loaded. This van remains at the site until it is full, at which time the dealer removes it and replaces it with another.

Frequency of Collection. Collections are usually monthly, biweekly or weekly. EPA data indicate that the overall level of participation, and thus the total quantity of paper collected, will be greater for programs with more frequent collection (e.g., weekly or biweekly) than for monthly collection programs. Collection costs, however, are correspondingly higher.

Standardization of Collection. To achieve maximum cooperation from the householder, collections must be conducted on a regular basis. Also, citizens must be fully informed of what is expected of them (e.g., newspapers to be wrapped with twine or placed in paper grocery sacks, etc.) and know exactly when the truck will be there.

System Requirements

Capital Investment. Capital is required only for any additional collection vehicles required by the program. Actual case studies conducted for EPA have shown, however, that only one of ten cities studied actually purchased a vehicle *(a small, used packer in this case) for its program.*[*] *Most of the vehicles used for separate collections have been either standby packers normally used when a breakdown in the regular fleet occurred, older trucks retained after new packers were purchased, trucks retained after re-routing, or simply trucks owned by the city and not fully utilized.*

Two communities, which regularly collected refuse four days a week, instituted separate collection on the fifth day using the same trucks normally used in their regular collection. In the cities studied, the institution of separate collection resulted in increased utilization of existing equipment rather than the purchase of new equipment. The fact that this form of resource recovery can often be implemented with little or no additional capital investment is one of the most appealing aspects of separate collection and an obvious reason for its rapid proliferation.

Maintenance, Operating and Overhead Costs. When a vehicle is used for separate collection, these costs are incurred just as they are for any collection operation. In addition, the costs for establishing and maintaining public participation by means of a public information program must be taken into account.[*]

Labor. Separate collection requires that more hours be spent on the collection route. Noteworthy, however, is that in all but two of *10 cities studied, no additional* labor was hired to implement separate collection. In these two cities, part-time personnel were employed for periods of heavy volume. It should also be noted that in every case studied, three-man crews were used only because it was standard collection practice to have three-man crews. As noted above, two-man crews are sufficient for paper collection. The additional labor hours - and cost - to the cities would have been considerably less had they not included this unneeded crewman.

RACK SYSTEM

The rack, or "piggyback," system of separate collection has been used by a private collector in San Francisco since 1962. It has received the most publicity in Madison, Wis., where piggyback collection was instituted by the city in cooperation with the Paper Stock Conservation Committee of the American Paper Institute (API).

System Description

Truck Modification. To employ this system, racks, varying in capacity from ½ to 1½ cubic yards, are installed beneath the body of a standard packer. Because of placement of auxiliary gas tanks and hydraulic equipment, however, not all packer trucks, are adaptable to this type of rack *(Figures 4 and 5)*.

Collection Procedures. As in the separate truck method, bundled newsprint is placed at the curb. Collection of mixed paper by this method is not recommended due to the space constraints of the racks. A major advantage of the rack system is that the householder need not be concerned with which day is paper collection day. The bundled paper is placed next to mixed refuse containers on any normal pickup day. Refuse and paper are thus collected simultaneously.

Overloading. Compared with separate truck collection, the rack method has apparent advantages in that the route must only be covered once, when regular collection is performed. A drawback to the piggyback system is the tendency of the racks to become filled before the body of the truck has been filled with waste. Madison, with a 60 percent participation rate (i.e., about 60 percent of the residents place newspapers at the curb on any given collection day), must

[*] *SCS Engineers. Analysis of source separate collection of recyclable solid waste; separate collection. (Environmental Protection Publication SW-95c.1. U.S. Environmental Protection Agency 1974. Distributed by National Technical Information Service, Springfield, Va., as PB-239775.)*

[*] *Residential Paper Recovery; A Community Action Program. Washington, U. S. Government Printing Office, 1975. (In press.)*

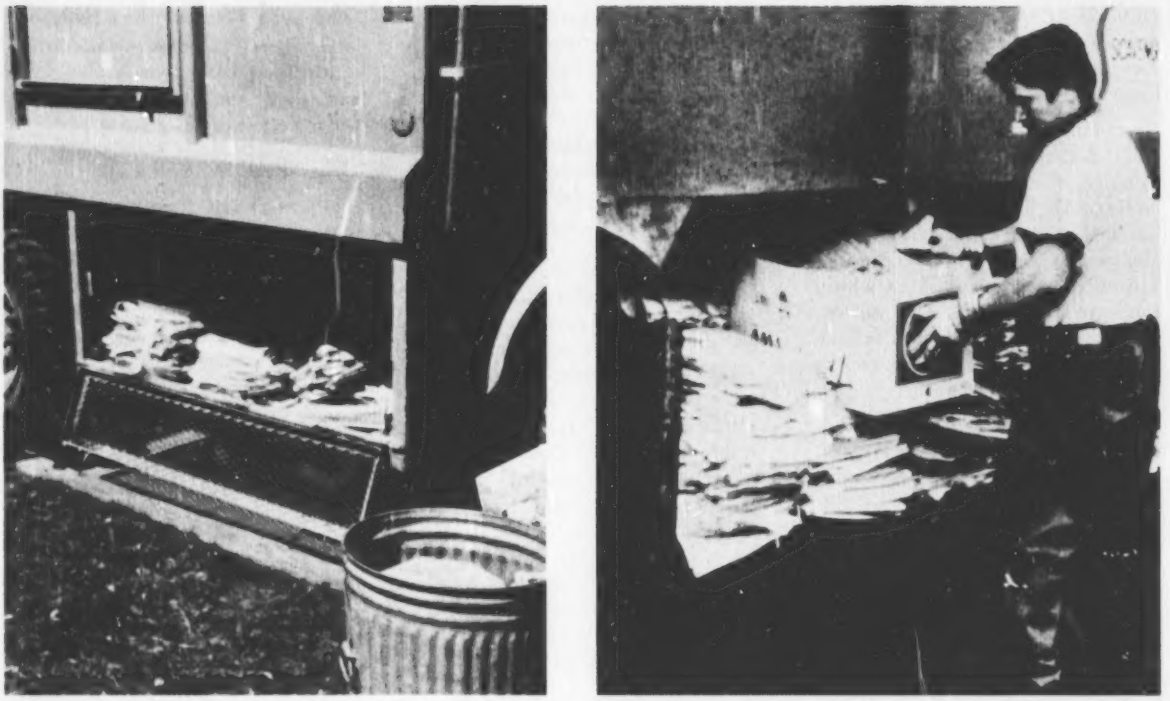

Figure 4. This is a special rack installed for holding bundled newspapers collected from residents in Madison, Wis. (left) and San Francisco, Calif. (right).

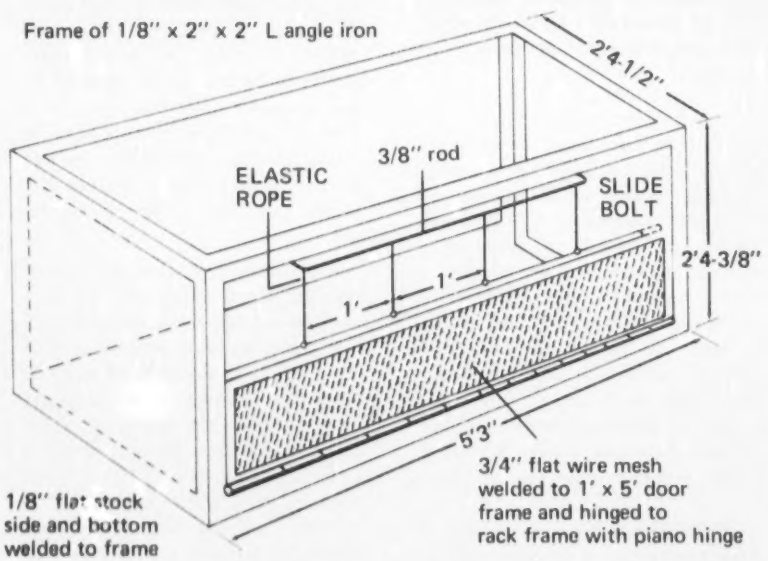

Figure 5. This is a detailed sketch of the newspaper rack used in Madison, Wis. Source: City of Madison Wis., Department of Public Works.

off-load the paper bins one or two times before the compactor body is full. To accomplish this with the least delay, the public works department stations bulk containers at strategic points in the collection areas. The crew members unload the paper into the bulk containers and proceed along the route. In Madison, approximately 10 minutes off the route are required for each unloading (driving time plus unloading). Although the amount of time spent on the route has been longer, no overtime costs have been experienced.

New Equipment Developments. Cities and waste haulers are now experimenting to improve the piggyback system by means of a rack designed to hold a greater quantity of newspapers, thus reducing time off the route.

One equipment manufacturer, Maxon Industries, Inc., has designed and is now testing a two-component truck for separate collection *(Figure 6)*.* The paper compartment is designed to have a capacity of about three cubic yards, or 10 percent of the truck's volume. This compartment is loaded by a hydraulically operated bin located behind the truck's cab. Unloading of the material is done automatically, after the mixed refuse has been off-loaded. The volume of the extra compartment is large enough so that the truck does not have to leave its regular collection route to off-load filled racks. The device is expected to add approximately $2,000 to the cost of Maxon's "Shu-Pak" model trucks.

An elevated rack is being used in Rockford, Ill. *(Figure 7)*. With this rack – developed by Bynal Products, Inc., – the material is thrown up into the rack by the collection crew as mixed refuse is collected.

While the size of this rack is larger than that used in Madison, its advantage lies in the fact that it need not be manually unloaded. When the rack is filled, the truck backs up to a stationary compactor or bulk bin and lowers the rear wall of the rack. This reduces unloading time to a minimum.

These developments, if proven to be operationally feasible, could significantly improve the economics of separate collection.

System Requirements

Capital Investment. Costs for materials and installation of the standard, "under-the-truck" rack range from $80 to $250 per rack. Madison's cost of $170 was about average. As noted previously, when participation reaches 20 to 30 percent, bulk containers may be needed. In this case, the additional

**Mention of commercial products does not imply endorsement by the U.S. Government.*

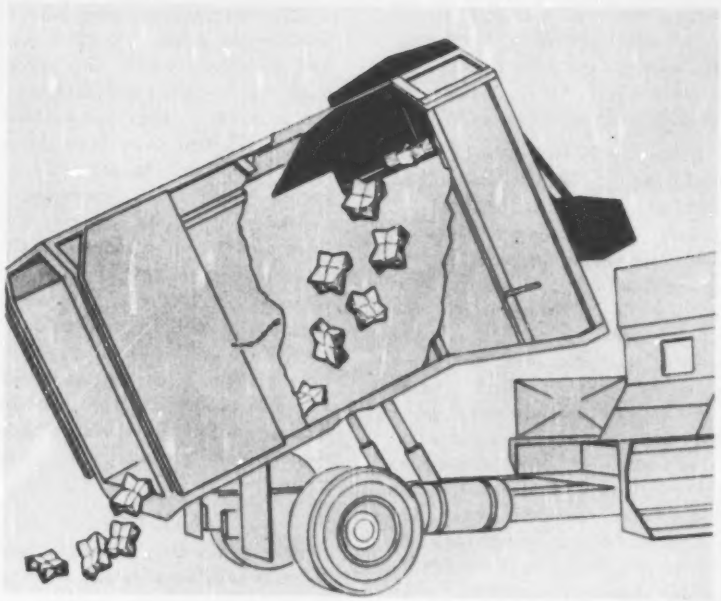

Figure 6. A bi-compartmental truck is now being tested by Maxon Industries, Inc., in Huntington Park, Calif.

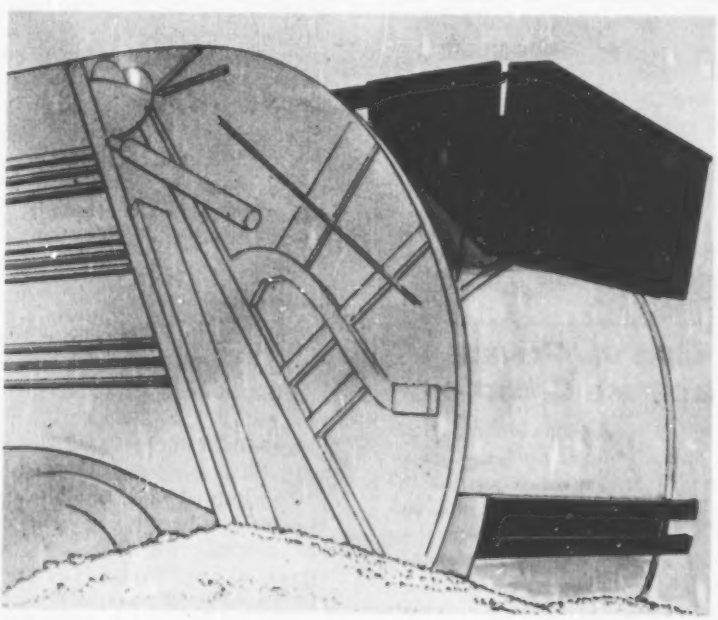

Figure 7. An elevated rack is being developed in Rockford, Ill.

cost for the bulk container(s) and truck will have to be included. In Madison, the cost for a bulk container was $550, while the initial cost of the truck was $7,000.

Labor. Time/motion studies conducted in Madison and San Francisco show that between 10 seconds (Madison) and 14 seconds (San Francisco) are required to pick up and load bundled newsprint at each stop in addition to the approximately 5 to 15 minutes required for off-loading the paper when the racks are filled.* In all cases studied, no additional labor costs are actually experienced because employees were not working a full day in normal waste collection. Nonetheless, either the existing collection system must be able to absorb the additional incremental time requirements when instituting the rack collection system, or the revenue from the paper and/or diverted disposal costs must offset incremental costs. Additional labor is required to collect off-loaded newspapers placed in lugger boxes. For Madison, this has amounted to one to three man-hours per day per truck for servicing the lugger boxes.

Public vs. Private Separate Collection

Private collection of wastepaper by a scrap dealer or waste hauler - popular on the West Coast - is one of the newer arrangements currently being tried in a number of communities. This system involves the least amount of time, money, and manpower on the part of the city. For cities which contract for regular waste removal services, private collection of paper may be their only option.

City management may have no involvement at all, as in the case of San Francisco where the private waste hauler carries out all facets of the program. Other communities have decided to share both the responsibility and the income from the program. With this mode of operation, the city requests bids from private scrap dealers and/or waste haulers for the privilege of an exclusive contract to pick up source separated paper. In return for a percentage of the income, the city usually agrees to support and publicize the program and to prohibit others from removing paper through an anti-scavenging ordinance.

COSTS

Due to the large number of variables, it is difficult to give meaningful average costs for separate collection. Its economic viability depends to a large extent on such factors as the: (1) type of regular collection practiced (i.e., frequency of collection, size of crews, etc.); (2) disposal costs; (3) revenue received for the paper; (4) participation rate of residents; (5) availability of under-utilized men and /or equipment; (6) efficiency with which the separate collection is carried out; (7) extent to which regular vehicles are re-routed to take advantages of reduced waste volumes.

Separate Truck Systems

EPA has studied the collection costs for mixed refuse and separately collected paper for 10 communities utilizing separate trucks for paper collection *(Table 3)*. The results shown reflect actual costs. The analysis included labor, ownership and maintenance of equipment, and overhead costs for both the regular waste collection system and the separate collection sub-system. Credit was given for revenue from the sale of the paper and for a proportionate percentage of the variable disposal cost for landfill and incineration. In cases where the community paid a second party for disposal, the entire unit disposal charge was deducted for each ton of paper sold. Important transportation savings may also result if recovered newspapers are hauled to a nearby off-loading point or market instead of a remotely located disposal facility. These savings have also been considered, where appropriate.

Based on the high wastepaper market prices of March 1974, the overall level of collection and disposal costs for these 10 cities ranged from a decrease of 23 percent to an increase of 16 percent (an average decrease of just under 5 percent). During a low wastepaper market period (April 1973), the same 10 cities showed an overall collection cost decrease of 4 percent to an increase of more than 16 percent (an average increase of 2.6 percent). Many of the cities experienced little change in overall costs. It should also be noted, however, that many of the programs were relatively new and few had been refined to any significant degree.

Interpretation of these results is difficult without additional knowledge of conditions in each community studied. However, using a modeling approach, comparison has been made of regular mixed refuse collection with separate collection based on assumed collection costs for an "average" city *(Figure 8)*. The impact of the separate collection was shown for various collection frequencies: once each week, once every two weeks, and once each month. The cost line between $20 and $21 per ton represents estimated mixed waste collection costs for once per week collection, with 20-cubic-yard packer, a 3-man crew, and a long (45 minute one-way) haul to the disposal site. The cost line between $15 and $16 per ton indicates the same mixed waste collection conditions with a short (15 minute one-way) haul. The cost impact of adding separate collection with a 20-cubic-yard packer and a 2-man crew is compared with the mixed waste collection cost. The curves represent: (a) different levels of disposal

*SCS Engineers, *Source separate collection of recyclable waste.*

TABLE 3

IMPACT OF SEPARATE COLLECTION ON OVERALL RESIDENTIAL SOLID WASTE MANAGEMENT COSTS –SEPARATE TRUCK APPROACH–*

Case Study Location	Collection and Disposal Cost Prior to Implementation of Separate Collection	Collection and Disposal Cost After Implementation of Separate Collection†			
		Low Paper Market (average $8 per ton)		High Paper Market (average $25 per ton)	
	($/Ton)	($/Ton)	(% Change)	($/Ton)	(% Change)
Dallas, Tex.	12.10	11.60	–4.1	9.30	–23.1
Fort Worth, Tex.	13.50	14.10	+4.4	11.80	–12.6
Great Neck, N. Y	36.00	38.70	+7.5	36.50	+1.4
Green Bay, Wisc.	38.70	37.70	–2.6	37.10	–4.1
Greenbelt, Md.	27.20	27.40	+0.7	26.30	–3.3
Marblehead, Mass.	23.10	25.30	+9.5	24.10	+4.3
Newton, Mass.	32.40	32.20	–0.6	31.60	–2.5
University Park, Tex.	14.70	14.90	+1.4	13.10	–10.9
Villa Park, Ill.	13.50	13.40	–0.8	12.40	–8.1
West Hartford, Conn.	26.30	26.50	+0.8	25.20	–5.7

**SCS Engineers, Source separate collection of recyclable waste.*
†Credit given for diverted disposal costs and revenue generated from the sale of separately collected wastepaper.

savings attributable to the separate collection (The higher curves represent disposal by incineration, the lower curves disposal by landfill.); (b) different levels of wastepaper prices. The data in *Figure 8* suggests that for both monthly and bimonthly separate collection frequencies the institution of separate news collection is likely to result in costs equivalent to or lower than mixed collection costs.

RACK SYSTEMS

Cost data on rack collection systems from case studies were compared, including the same elements described above for the separate truck systems *(Table 4)*. Based on March 1974 prices received for paper in a small number of cities studied, separate collection lowered overall collection costs. The reduction was slightly less than with the separate truck systems. As mentioned previously, the effectiveness of the rack approach depends on the ability of the existing refuse collection and transfer operations.

A cost analysis of rack collection using a modeling approach was made for a hypothetical municipality of 10,000 households in a recent EPA study *(Figure 9).** The discontinuity in the curve represents the participation level at which the collection trucks would have to leave their routes to off-load a filled paper rack. The impact of the extra time off-loading causes a corresponding increase in collection costs.

These costs analyses provide some comparative insight into the rack and separate truck approaches. However, based on experience to date, it appears that specific conditions in each city would dictate the choice between separate truck and rack collection. The ability to fit racks on existing collection trucks, the number of available men and trucks at the city's disposal, and the manner in which collection is carried out (routing, hours per day and days per week worked by waste collectors) would be some of the major factors relating to this choice.

**SCS Engineers, Source separate collection of recyclable waste.*

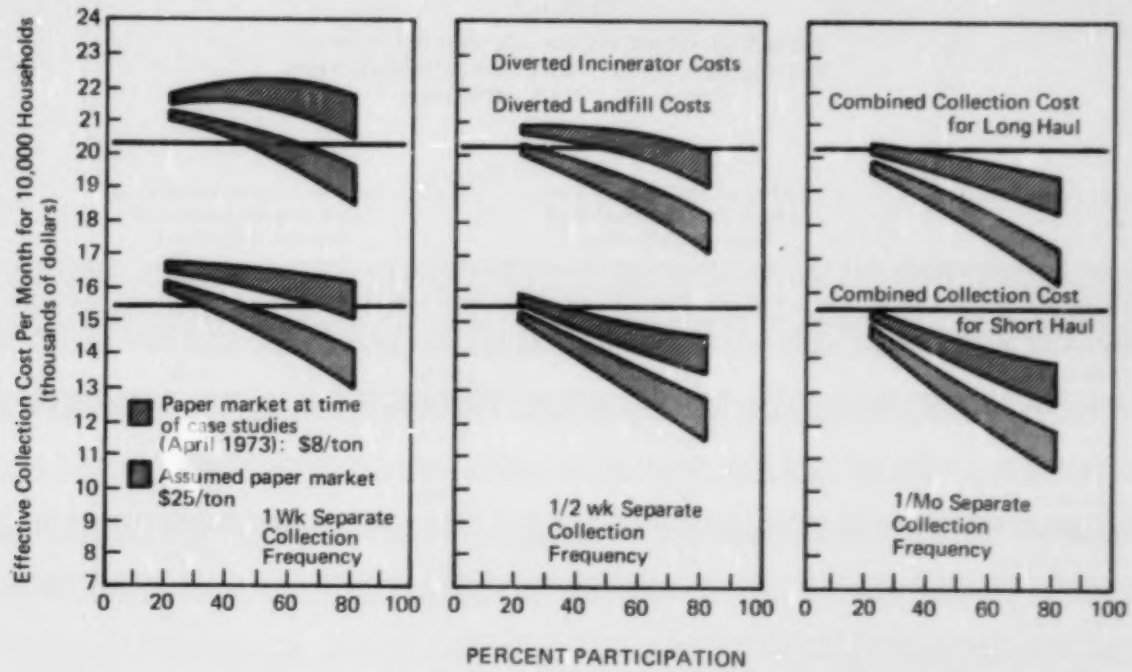

Figure 8. A modeling analysis of the impact of separate paper collection on collection costs: 3-man mixed refuse collection performed once per week compared with a combination of 3-man mixed refuse collection performed once per week and 2-man separate collection at various frequencies.

Separate Collection Success Factors

MARKETS

Shortages of woodpulp, increased wastepaper exports and other factors created a strong market for used newsprint, corrugated containers and even mixed paper in 1973. By the end of 1973, prices for wastepaper were at historically high levels. Forecasts by the American Paper Institute predicted a 7 percent increase in domestic consumption of old newsprint from the beginning of 1974 through 1975, a steady but not dramatic growth.

In addition, exports of old newsprint were expected by most observers to increase, while several domestic paper companies were reportedly considering building mills to make newsprint from old newspapers. An adequate supply of old newsprint seems to be their primary concern.

The advent of the recent recession dramatically altered the booming wastepaper market in the second and third quarters of 1974. The production of such construction materials as roofing felt and wallboard, which utilize wastepaper, slowed during this same period with the decline in new home building. Also, the production of boxboard, the largest user of reclaimed newsprint, fell some 33 percent between December 1973 and December 1974, in keeping with the general sales decline. Recession abroad, causing curtailment of wastepaper exports, compounded the domestic market problems. It is now the consensus of EPA, the American Paper Institute, and various paper-producing industries that wastepaper prices and demand will rise and level off as the economy improves.

What is more important for the municipal decision-maker in rela-

TABLE 4

IMPACT OF SEPARATE COLLECTION ON OVERALL RESIDENTIAL SOLID WASTE MANAGEMENT COSTS –RACK APPROACH–*

Case Study Location	Collection and Disposal Cost Prior to Implementation of Separate Collection	Collection and Disposal Cost After Implementation of Separate Collection			
		Low Paper Market (average $8 per ton)		High Paper Market (average $25 per ton)	
	($/Ton)	($/Ton)	(% Change)	($/Ton)	(% Change)
Madison, Wis.	22.30	22.00	–1.3	20.50	8.1
New York, N.Y.†	53.50	53.40	–0.2	53.50††	–0–
Sheboygan, Wis.	32.00	31.80	–0.6	31.50	–1.6

**SCS Engineers, Source separate collection of recyclable waste.*
†Queens District 67 only.
††The small quantities of newspaper separately collected had an insignificant effect on overall costs.

tion to markets is not to try to predict price fluctuations, but to determine the minimum price that he can receive and still have a break-even program. He should then negotiate a contract of a year or more duration with that minimum price as a floor. If the price rises above that level, so much the better.

It is incumbent upon any city considering resource recovery, therefore, to conduct a market study as the first order of business. In a small city or suburban community, this may take the form of a few phone calls to wastepaper dealers or to local manufacturers who utilize wastepaper to manufacture such products as boxboard, chipboard, insulation and roofing materials, and newsprint.

These contacts should be followed by meetings with those dealers and manufacturers who show interest in buying the recovered paper. At these meetings, the quality specifications of the buyer, shipping and hauling arrangements, and other requirements which both the city and purchaser must meet can be clarified. Larger cities are advised to conduct a more formal market study, and to seriously consider requesting bids from prospective buyers. *(Sample Bid Specifications, Appendix A.)* To proceed further with the project, cities are advised to procure letters of intent from reputable dealers *(Appendix B)*.

If the results of further investigation into the other aspects of a source separation program are deemed to be positive and the project is approved, it is advisable to enter into a formal contract with the buyers (*Sample Contract, Appendix C*). If possible, the contract should first guarantee that the paper will be purchased for a specified period of time (this is usually 1 year, although some companies have offered contracts of 5 and 10 years); secondly, it should guarantee a minimum or floor price which the city considers reasonable. The price received by the city may float above the floor price and is usually determined by the weekly quotations in *Official Board Markets.** This publication reports wastepaper prices by grade in 12 major cities.

**Official Board Markets. Chicago, Ill.*

PUBLIC EDUCATION

The success of a source separation program depends heavily on citizen awareness, cooperation, and concern. None of these is possible without a vigorous public education campaign to explain the goals and methods of the program. Such a campaign should begin well in advance of the institution of the program. Information dissemination techniques such as radio and TV spots, newspaper articles and advertisements, posters, door hangers, flyers, and oral presentations are the usual modes of publicity. The active participation of local environmental and service organizations is an excellent means of developing public interest. These organizations can be extremely effective through their contacts with schools and other civic groups. They are usually willing to give speeches, make posters, and conduct door-to-door canvassing at no cost to the city.

Public education must continue after the program has begun. Occasional flyers inserted in public utility bills as well as weekly or monthly newspaper follow-up articles are recommended. Continued support of citizen organizations is most helpful in sustaining interest and increasing participation. One large Eastern city includes information on the program with each house title and lease to assure that new arrivals in the community are informed of their efforts in resource recovery.

EPA has available a brochure which describes how a community can plan, implement and sustain an ongoing publicity campaign. *(Residential Paper Recovery: A Community Action Program). Washington, U.S. Government Printing Office, 1975. (In press.)*

HOUSEHOLDER IMPACT

Home separation is neither expensive nor time-consuming for the householder. In a recent study, 15 families kept detailed records of

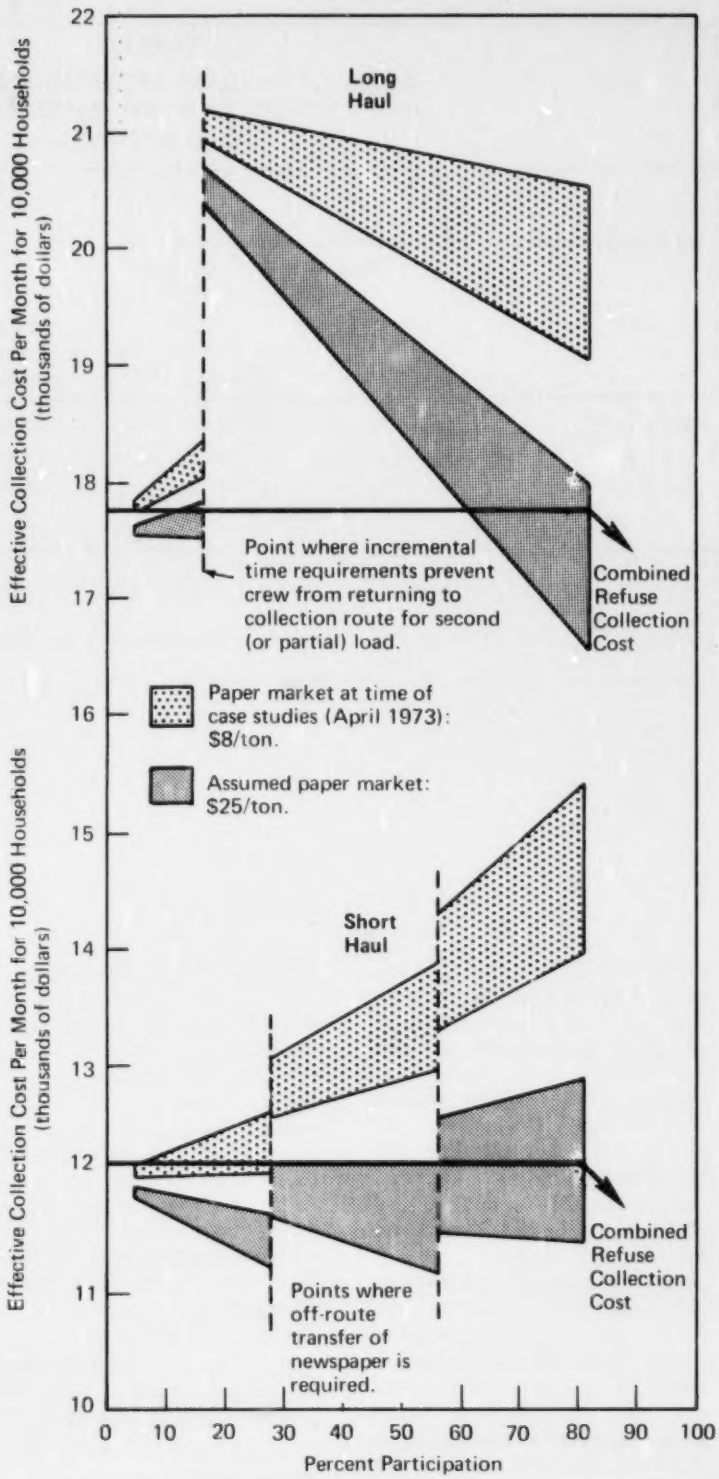

Figure 9. A modeling analysis of the impact of rack collection of separated newspapers on total collection costs (3-man crew).

all factors impacting on the separation of glass, cans, and newsprint in their homes for a period of six weeks.* Incremental costs (twine for bundling, water for washing, etc.) were two cents per month per family. The average time spent on these activities was about 15 minutes per week. The separate bundling of newspapers, which is the separation activity that seems most universally acceptable, took only 2.3 minutes per week and required less than one cent per month in out-of-pocket costs. A recent survey of housewives' attitudes on solid waste found that 73 percent of those interviewed felt home separation would be "easy" to "very easy" for them to carry out.†

SCAVENGERS

Due to the value of secondary materials, many cities have experienced difficulties with unauthorized persons picking up source-separated materials before the authorized truck arrives. This does not represent a legal problem for municipalities which have chosen to grant an exclusive franchise to a private firm for waste collection. In such municipalities, sanctions which normally exist to discourage collection by firms other than the licensee may be brought to bear on scavengers. In communities in which such sanctions do not exist, an anti-scavenging ordinance should be passed. Judicial precedent indicates that in most states it is permissible for municipalities to grant exclusive contracts for the collection of solid waste and to prohibit collection by all but city employees or licensees. This authority, combined with the municipalities' traditional power to protect public health and safety, should provide a legal basis for such an ordinance.

Anti-scavenging ordinances do not preclude volunteer groups from collecting newspapers as one of their traditional revenue producers. If residents prefer to save their newspapers for such volunteer drives, they should not be discouraged from doing so; however, to avoid confusion as to the ownership of the material, accumulated paper for these drives should not be set at the curb. This distinction can be made clear in the anti-scavenging ordinance so that the paper drives of volunteer groups are not threatened *(Sample Anti-Scavenging Ordinance, Appendix D)*.

The anti-scavenging ordinance passed in Hempstead, New York, in 1971 has been used as a prototype in many communities. The ordinance states that all waste placed at the curb becomes the property of the city. Stringent fines are imposed upon scavengers. Strict enforcement, particularly at the beginning of a program, is strongly urged. As much publicity as possible should be given to enforcement efforts in order to discourage potential offenders.

Voluntary Paper Separation vs. Mandatory Requirement

Most separate collection programs are voluntary in that they "request" citizen support. An increasing number of cities, however, are passing ordinances which "require" separation. A recent study of 17 cities found that mandatory programs received cooperation from 60 percent (average) of the population, while voluntary programs had a participation rate of 30 percent.* These numbers are misleading, however, in that most of the systems have only recently begun. Other data from the same study indicate that participation rises over time, and that as these systems reach the two- and three-year level, the relative difference between voluntary and mandatory programs will probably diminish *(Sample Refuse Disposal and Collection Ordinance Including the Mandatory Consideration, Appendix E)*.

**SCS Engineers, Source separate collection of recyclable waste.*

Pilot vs. Full-Scale Programs

Most programs begin with a pilot area and expand later. This procedure allows the city to adjust gradually to the new system, and to experiment with methods which might reduce costs and minimize risk. It also allows time for the market to adjust to the new source of supply.

The duration of a pilot program should be no less than six months. Because waste in our society has been so long ignored, the handling of it is largely a mindless function. Time is needed to change the habits of citizens, and to acquire their cooperation in any new program. A 1- or 2-month program will demonstrate little on full-scale economics, because as time passes participation increases, with resultant increases in tonnage and revenues. An analysis of 10 cities at various points in time show a rise in participation rates for at least a

**SCS Engineers, Source separate collection of recyclable waste.*

†National Analysts, Inc. Metropolitan housewives' attitudes toward solid waste disposal. U. S. Environmental Protection Agency, 1972. 120 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-213 340).

year (*Figure 10*). Participation may continue to rise after that if a strong publicity and awareness program is maintained.

CONCLUSIONS

Recovery of secondary materials through source separation and municipal collection on a regular basis is a new phenomenon, having been practiced only in isolated instances until 1970. Since that time, it has grown rapidly as a means of recovering paper – primarily newsprint – from municipal waste.

Separate collection requires careful planning and administration on the part of the city as well as the cooperation of citizens. Special efforts must be made to educate and inform residents as to the goals and procedures of the program. The public information aspects of the program cannot be overemphasized. A system which is properly sustained through a continuing public education program will attain a growing rate of participation, while placing few demands on citizens. To date, participation in existing programs - when properly organized, implemented, and sustained - has been encouraging.

The characteristics and requirements for separate collection of paper have been determined and data have been gathered on costs. Some of the data, however, are at somewhat less precise levels than data on other collection methods which have been utilized for many years. It is difficult to generalize about costs, because of variations from city to city. This is partly due to the fact that separate collection is usually implemented to fit in with the collection system that exists. However, the data indicate that even for relatively new systems, separate paper collection can - depending on markets - be accomplished with little or no increase in costs to the city and possibly even with a net savings. This has been the case with relatively new systems, for which citizen participation and efficient routing have not been achieved.

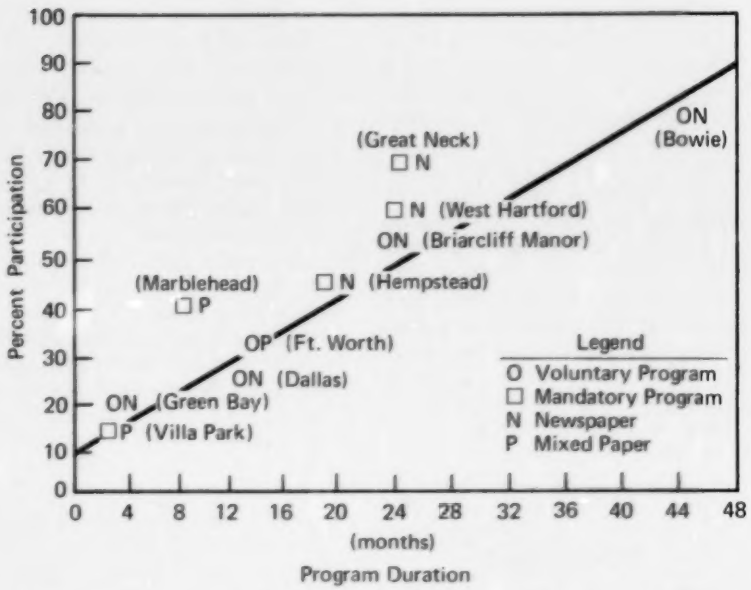

Figure 10. Participation vs. program duration for separate collection. Source: SCS Engineers, Source separate collection of recyclable waste.

The economics of the program depend upon a variety of factors. Costs can be reduced by: (1) effecting a good public awareness campaign to increase the participation rate; (2) obtaining an assured market through competitive bidding procedures and/or contracts; (3) utilizing existing equipment and manpower as much as possible; (4) instituting and enforcing an "anti-scavenging" ordinance.

On the basis of these parameters and the experiences of existing programs, it seems reasonable to assert that a revenue of $15 per ton (the floor price), F.O.B. a nearby transfer point, should be able to cover the costs of a newspaper recovery collection program in many instances. This presumes that the newspapers are delivered to market in a form and to a specification agreed upon.

Source separation and collection of newspapers help to conserve a resource with significant economic value. At the same time, it effectively reduces solid waste quantities, which in turn, extends the life of landfills and incinerators.

The U.S. Environmental Protection Agency recommends that separate collection of paper be investigated and that implementation be given serious consideration by any city in which markets are found to exist.

APPENDIX A

SAMPLE BID SPECIFICATIONS

_____COUNTY

STATE OF_____

DEPARTMENT OF SANITATION

NOTICE

The Purchasing Agent of _____ County, _____, will receive proposals in his office, Room _____, Bldg. _____, until _____, 19____, _____ a.m./p.m. Prevailing Time:

PURCHASE OF WASTE NEWSPAPERS SEPARATELY COLLECTED UNDER CONTRACT FROM _____ COUNTY

Plans, specifications, and standards for this work, as well as proposal forms may be obtained in the office of the Purchasing Agent, (address) _____. The description which follows is only a summary of the specifications.

The County specifies that the contractor shall guarantee for the period specified in the contract to purchase on a daily basis, at the price as determined in the contract, all waste newspapers collected under any contract from _____County which are delivered to a mutually agreed upon site(s) located within the legal limits of _____ County.

The exact quantity of newspapers to be sold under this contract is unknown, but is estimated for information purposes only to be about _____ (No. of) tons per month. The newspapers shall be delivered to the receiving site in an "as picked up" condition; no processing of newspapers will be done by_____County or its collection contractors. All processing, transportation or service charges incurred after delivery of the newspapers to the receiving site shall be the obligation of the newspaper purchaser.

The price per ton (ton equals 2,000 pounds) for purchase shall be the highest marked value as determined by the "Paper Stock Prices Per Ton" for "No. 1 News" in the Market Area of the City of _____ as printed in the *Official Board Markets* ("The Yellow Sheet") less a fixed charge to the object of this bid. The purchaser guarantees to purchase all accumulated and delivered waste newspapers at a minimum price of $ _____ per ton.

The term of the contract shall be for _____ year(s), commencing _____, 19__ and be renewable for_____year(s).

The County reserves the right to reject any and all bids.

Envelope to be clearly marked "Sealed Bid on Newspaper Purchase" in the lower left hand corner.

Signed _____
Purchasing Agent

_____ County

_____ COUNTY

STATE OF _____

DEPARTMENT OF SANITATION

SPECIFICATIONS FOR PURCHASE OF WASTE NEWSPAPERS

COLLECTED UNDER CONTRACT FROM _____ COUNTY

STATE OF _____

The following specifications cover the proposed price agreement for purchase of waste newspapers collected under contract from _____ County, _____ (State).

1. *Guaranteed Purchase of Waste Newspapers:* Not withstanding any reason, including but not limited to work stoppages, the contractor shall guarantee for the period specified in the contract to purchase on a daily basis (weekdays only, including holidays except for Christmas Day and New Year's Day) at the price as determined in the contract all waste newspapers collected under any contract from _____ County which are delivered to a receiving site mutually agreed upon by the purchaser and County at hours mutually agreed upon by the purchaser and County. The receiving site shall be located in _____ County (unless another place is specifically agreed to by purchaser and the County).

2. *Quantity and Condition of Newspapers:* The exact quantity of newspapers to be sold under this contract is unknown. For its own purposes, _____ County has estimated that the quantity may be about _____ tons per month. This estimate is furnished for information only and in no way is given as a minimum, maximum, or average amount of newspapers to be sold. The newspapers shall be delivered on the same day as they are collected to the receiving site in an "as picked up" condition; no processing, bundling, or baling will be done by _____ County or its collection contractors and no adjustment in price shall be allowed for the moisture content of the wastepaper due to inclement weather conditions. All processing, bundling, baling, transportation or service charges incurred upon or after delivery of the newspaper to the receiving site shall be the obligation of the newspaper purchaser.

3. *Verification of Waste Newspaper Weight:* The purchaser shall deliver a certified weighing slip to the County or its agent at the time of delivery at the receiving site and such weighing slip may be verified by the County. The County reserves the right to challenge the weight as determined at the receiving site and to verify same at weighing scales located at a County weighing station. In case of discrepancy between weights determined at the receiving site and County weighing station, the weight determined at the County station shall be used to determine the price for said waste newspaper.

4. *Form for Bid:* The price per ton (ton equals 2,000 pounds) for purchase shall be the market value, or if a range of market values exists, the highest market value within the range, as determined by the "Paper Stock Prices Per Ton" for "No. 1 News" in the Market Area of _____ as printed in the *Official Board Markets* ("The Yellow Sheet") (published by Magazines for Industry, Inc.) less a fixed charge to be the object of this bid. Notwithstanding anything to the contrary here before set forth, the purchaser guarantees to purchase all accumulated and delivered waste newspapers at a minimum price of $_____ per ton.

5. *Term of Contract:* The term of the contract shall be for _____ year(s), commencing _____, 19_____; the County shall have the option of extending the contract for an additional _____ year(s) period under the same terms and conditions. The County shall give thirty (30) days notice prior to the expiration date of its exercise of the option.

6. *Compliance with Laws and Regulations:* The contractor shall be responsible for the conduct of his employees in this service. All laws, Ordinances and Regulations pertaining to the collection, transportation, and disposal of refuse shall be observed.

7. *Payment:* The contractor shall pay to _____ County on a bi-weekly basis the amount due for waste newspapers received at the receiving site. Payment shall be due and payable within ten (10) calendar days from the date of receipt of the last waste newspapers delivered during the bi-weekly period.

8. *Form of Contract:* The successful bidder will be required to enter into a contract which contains additional terms and conditions to carry out the foregoing.

This agreement shall be contingent on satisfactory performance.

APPENDIX B

SAMPLE

LETTER OF INTENT TO BID FOR THE PURCHASE OF RECOVERED WASTEPAPERS*

WHEREAS, the _____ Corporation (hereinafter called the CORPORATION) endorses resource recovery from municipal solid waste as a means toward a cleaner environment and preservation of natural resources, and

WHEREAS, the _____ Jurisdiction(s) (hereinafter called the JURISDICTION) is working toward establishment of a source separation of wastepaper program from municipal solid waste,

THEREFORE, it is mutually agreed between the CORPORATION and the JURISDICTION to work together as follows:

(1) The JURISDICTION is planning for the separate collection of _____ tons per week or more of source separated _____ papers _____ in a form usable and acceptable to the CORPORATION according to the specification attached to this Agreement and made part hereof.

(2) The CORPORATION will communicate to the JURISDICTION that information about its use technology and business practices which the CORPORATION at its sole discretion shall consider necessary so as to assure receipt of the recovered material in form and cleanliness necessary for use by the CORPORATION. Such communication shall be on a non-confidential basis, unless otherwise subject to a subsequent confidentiality agreement.

(3) The Specification for acceptance of the recovered product shall be as Attachment 1 and made part of this Agreement by reference.

(4) The CORPORATION, as an expression of its support of the wastepaper recovery program, agrees to respond to a request for bid for the sale of all recovered _____ product resulting from the implementation of a separate collection program for an average of _____tons per week by the JURISDICTION and delivered in accord with the above specifications and according to "Additional Conditions" of the CORPORATION'S which may subsequently be made part of this Agreement by reference as long as agreed upon by both parties and according to the following points:

(a) the purchase order will be open for five (5) years.

(b) the CORPORATION has the right to reject any material delivered which does not meet specifications, at the expense of the JURISDICTION.

(c) the monthly price paid shall be determined according to the listed prices for *(recovered wastepaper)* as published in the last issue of the preceding month in *(publication)*, using the mid-range (or high-side or low-side) of the quotation less $ *(to be submitted at the time of bid)* per ton, or $ *(specified)* per ton floor price, whichever is greater, for the duration of the contract, f.o.b. location(s) within the JURISDICTION;

or

(c) the monthly price paid shall be determined according to the listed price for *(recovered wastepaper)* as published in the last issue of the preceding month in *(publication)*, using the mid-range (or high-side or low-side) of the quotation times *(to be submitted at time of bid)* percent or $ *(specified)* per ton floor price, whichever is greater, for the duration of the contract, f.o.b. location(s) within the JURISDICTION.

(d) the bid will be subject to *force majeur.*

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*Source: National Center for Resource Recovery, Inc., Washington, D.C.

(5) For the wastepaper recovery program now being planned for the JURISDICTION, this public body may be required to advertise for purchase of any recovered materials. Should such public bids be advertised, this LETTER of INTENT may be entered as a responsive bid. This is not to preclude award to highest offer for purchase of the recovered material which meets all other requirements of the request for bids.
(6) The JURISDICTION and the CORPORATION mutually agree to continue communication between this date, and the date of implementation of the wastepaper recovery program. Implementation is now estimated at one year hence.
(7) This Agreement is contingent upon the JURISDICTION or other designated public body proceeding with plans for implementation leading to procurement and construction prior to *(specified date)*, a mutually extendable date.

Witnessed by:

JURISDICTION

_____

_____

_____

By _____

Witnessed by:

CORPORATION

_____

_____

_____

By _____

ATTACHMENT TO APPENDIX B

Sample Specifications for Recovered Newspapers

1. Consists of old newspapers, including the normal percentage of rotogravure and colored sections; collected and handled separately from regularly collected municipal solid waste; packed loose as received.
   Source: Garden State Paper Company.

2. Consists of folded newspapers, including the normal percentage of rotogravure and colored sections; packed in bales of standard dimensions, not less than 54 inches long, approximately 1000-1500 lbs. per bale; *Moisture:* packed air dry; *Prohibitive materials:* less than .5%; *Outthrows:* less than 2%; *Water solubles:* less than 2% of the acceptable paper; *Organic solubles:* less than 2% of the paper.
   Source: American Paper Institute.

APPENDIX C

SAMPLE CONTRACT TO SELL USED PAPERS*

This Agreement entered into this_____ day of _____ 1974, by and between WASTE PAPERS, INCORPORATED, a _____Corporation, with business offices at_____ , party of the first part, hereinafter referred to as "Contractor," and THE COUNTY BOARD OF ARLINGTON COUNTY, VIRGINIA, a body corporate, party of the second part, hereinafter referred to as "County."

WITNESSETH:

That for and in consideration of the mutual promises and covenants herein contained, and Ten Dollars ($10.00) in hand paid, each to the other, receipt of which is hereby acknowledged, the parties hereto agree as follows:

1. Contractor agrees to purchase on a daily basis all waste newspapers collected on behalf of Arlington County, Virginia, either by County or its collection agents, and delivered daily to a mutually agreed upon receiving site located in Arlington County, Virginia; Alexandria, Virginia; or Washington, D.C.
2. Contractor agrees to accept delivery of all waste newspapers at its receiving site daily (Monday through Saturday, including all holidays except Christmas and New Year's Day) between the hours of_____ A.M. through _____ P.M.
3. It is mutually understood and agreed that County is not restricted as to either the minimum or maximum quantity of waste newspapers to be delivered to Contractor and that no adjustment shall be made on account of the moisture content of the waste newspapers due to inclement weather conditions.
4. It is mutually understood and agreed that waste newspapers shall be delivered to the receiving site in an "as picked up" condition and that no processing, bundling or baling of newspapers will be done by County or its collection agents; but that all processing, bundling, baling, transportation or service charges incurred after delivery of the waste newspapers to the receiving site shall be at the expense of Contractor.
5. Contractor shall deliver a certified weighing slip to the County or its agent at the time of delivery at the receiving site and such weighing slip may be verified by the County. The County reserves the right to challenge the weight as determined at the receiving site and to verify same at weighing scales located at the County Transfer Station. In case of discrepancy between weights determined at the receiving site and County Transfer Station, the weight determined at the County Transfer Station shall be used to determine the price for said waste newspapers.
6. Contractor shall pay to County on bi-weekly basis the amount due for waste newspapers delivered to its receiving site. Payment shall be due and payable within ten (10) calendar days from the date of receipt of the last waste newspapers delivered during a bi-weekly period. Such payment shall be accompanied by an itemized list of daily receipts.
7. It is mutually understood and agreed that the price per ton (2,000 pounds) to be paid by Contractor to County shall be computed on the following basis:

   The price per ton (2,000 pounds) of waste newspapers delivered during a calendar week (Sunday through Saturday) shall be determined by reference to *Official Board Markets* ("The Yellow Sheet") published by Magazines for Industry, Inc. and shall be the highest market value quoted in "Paper Stock Prices Per Ton" for "No. 1 News" in the market area of "Philadelphia" less a fixed charge of ten dollars and fifty cents ($10.50).

*Source: *Arlington County, Virginia*

The issue of *Official Board Markets* to be used in determining the price per ton to be paid by Contractor shall be the first publication date within each week. However, if no issue of *Official Board Markets* is published during the week, the last issue thereof published the preceding calendar week shall be used in determining the market value for the said week.

Notwithstanding anything to the contrary heretofore set forth, Contractor guarantees to purchase all accumulated and delivered waste newspapers at a minimum price of $10.00 per ton.

8. The initial term of this Contract shall be for a one-year period beginning _____ _____ and County shall have the option of renewing the Contract for one (1) additional year under the same terms and conditions by giving a 30-day notice prior to the expiration date hereof.

9. Contractor shall not assign this Contract or any interest therein without the prior written consent of the County thereto.

IN WITNESS WHEREOF, _____ _____, has executed this Agreement on behalf of the County Board of Arlington County, Virginia, a body corporate, pursuant to a resolution of said Board, duly adopted on _____; and Waste Papers, Incorporated has caused this Agreement to be executed in its corporate name by its _____ and its corporate seal to be hereunto affixed, duly attested by its _____; said officers being thereunto duly authorized all as of the day, month and year first hereinabove written.

ATTEST:

WASTE PAPERS, INCORPORATED

_____

By _____

ATTEST:

THE COUNTY BOARD OF ARLINGTON COUNTY, VIRGINIA

_____

By _____

APPENDIX D

SAMPLE OF SEPARATE COLLECTION ORDINANCE

INCLUDING AN ANTI-SCAVENGING PROVISION*

SEPARATION, BUNDLING, BAGGING AND PICK-UP OF NEWSPAPERS FOR RECYCLING

Section 3-A. After adequate notice has been published, posted, and publicized for a garbage and refuse district or for a particular collection area, it shall be mandatory for persons who are owners, lessees, or occupants of residential dwellings in the Town to separately bundle newspapers for collection and recycling.

Said newspaper shall be placed in kraft bags or tied securely with rope or cord in packages not exceeding fifty (50) pounds, and said packages shall be placed separately at the curb for collection on days specified by the Commissioner of Public Works under the rules and regulations prescribed.

After said newspaper bundles are placed in the vicinity of the curb for pickup collection and recycling, it shall be unlawful and an offense against this Ordinance for any person, firm, or corporation other than the owner, lessee, or occupant of a residential dwelling, or licensed cartman for that area or district to pick up said newspaper for his own use.

**Source: Town of North Hempstead, New York, Effective September 1, 1971.*

APPENDIX E

SAMPLE REFUSE DISPOSAL AND COLLECTION ORDINANCE*

Definitions

A. GARBAGE shall mean all animal, fish, fowl, fruit or vegetable waste incident to and resulting from the use, preparation and storage of food.

B. REFUSE shall mean all waste or rubbish of any kind, including garbage, either combustible or noncombustible in nature, having little or no value except as waste or rubbish, or as may be determined through a recycling process.

C. NEWSPRINT shall mean a common and inexpensive machine-finished paper made chiefly from wood pulp and used mostly for newspapers.

Refuse Preparation, Disposal and Collection

A. Preparation of Refuse for Disposal

1. Garbage. All garbage before being placed in a container for collection, shall be thoroughly drained and well wrapped. The burning of garbage shall be prohibited unless such burning takes place in an auxiliary fired gas or electric incinerator approved by the Building Inspector.

2. Miscellaneous Refuse. All unwrapped refuse shall be cleaned of garbage before placing same in refuse containers.

3. Newsprint. Newsprint shall be separated from all other refuse and shall be collected separately. It shall be tied in bundles or contained loosely in regular covered containers not exceeding 32 gallons in capacity and placed next to the curb or adjacent to the alley in such a manner that it will not be blown or scattered or become frozen to the ground. When so placed, it shall be presumed that all such newsprint is left for collection by Village crews and shall be considered property of the Village.

4. Miscellaneous Combustible Refuse. Combustible refuse, excluding newsprint, which cannot be placed in a container, must be tied in bundles or placed in such a manner that it will not be blown or scattered about or become frozen to the ground. Such bundled or contained refuse shall be placed next to the regular collection containers convenient to Village crews, in such a manner as to avoid being a nuisance to the neighbors or the area.

B. Collection of Refuse

1. The owner or occupant or every dwelling or place of business where refuse is accumulated shall be required to provide metal or heavy duty plastic containers or containers approved by the Commissioner of Public Works or his designee, equipped with tight fitting covers. Except as otherwise provided herein, all refuse shall be placed in said containers and may be combined therein. A sufficient number of containers shall be provided to hold all refuse accumulated between regular weekly collection periods.

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*Source: *Village of Shorewood, Wisconsin, January 1974.*

2. Except as otherwise provided herein, all refuse containers shall be placed outside of the dwelling or building and near the alley or to the rear of a driveway convenient to the collectors, in such a location so as not to be a nuisance to the neighbors or create a nuisance to the area.

3. Refuse containers shall be of a size not to exceed 32 gallons capacity. A single container when filled shall not weigh more than 60 pounds.

4. Covered containers for special newsprint collection will be designated by a daub of red paint on the cover or by a red cloth attached to the cover handle. Containers shall be replaced when leaking or in any way defective. Containers must be kept covered at all times.

5. There shall be no regular basement or in-building refuse collection. Basement or in-building refuse collection, when requested, shall be provided, but shall be subject to a monthly charge of $4.00; this monthly charge shall only cover the first 20 minutes each week of collection time required for each property serviced; for any additional time required, each week, to make such collection for each property serviced, additional charges shall be imposed as enumerated under Section D 3 hereof. The conditions and provisions of Subsections D 4 and 5 hereof shall be applicable to this Subsection, and shall govern herein.

C. Newsprint Collected Separately

Newsprint, in accordance with the provisions of Section 11-602.-3 hereof and as herein set forth, shall be collected separately beginning on the first working day of each month or on a schedule established by the Commissioner of Public Works.

1. Containers used for regular weekly refuse collection which hold clean newsprint will not be serviced until the clean newsprint has been removed therefrom unless the newsprint therein has been used to wrap other refuse or is soiled. A red tag shall be affixed by Village crews to such containers holding clean newsprint and other refuse, which tag shall note the violation of the regulation requiring separation of newsprint from other refuse.

2. In addition, the Village shall provide containers for newsprint collection to be located in various designated areas in the Village which shall be determined by the Commissioner of Public Works. Residents may bring their newsprint to such designated areas at any time and place it in the containers so provided.

3. Further, the Village will assist charitable fund raising organizations located within the Village in their paper collection drives by servicing Village approved large commercial type refuse containers suitable for mechanical dumping into Village packer trucks when located in agreed upon areas in the Village. The revenue from said paper collected, less handling charges assessed by the Village, will be returned to said fund raising organization.

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Commissioner Authorized to Make Additional Rules and Regulations

The Commissioner of Public Works is hereby authorized to make additional reasonable rules and regulations for the administration of the refuse collection services of all types performed in the Village, provided no such regulations and rules contravene the specific provisions of this article and are in no way inconsistent with the established policies of the Village Board.